

**REMARKS**

Claims 1-42 are pending in this application.

In the most recent Office Action, Applicants' arguments with respect to the rejections of claims 1, 2, 10, 12, 18, 19, 20, 22, 23 and 24 under 35 U.S.C. 102(e) and claim 9 under 35 U.S.C. 103(a) were fully considered and found persuasive. Therefore, those rejections were withdrawn. However, upon further consideration, the Examiner found new grounds for rejection in view of Tanner (US Patent 4,882,733).

Claims 1, 2, 8, 10, 12, 18, 19, 20, 22, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda et al. (US Patent 6,888,789, hereafter "Sakoda") in view of Tanner (US Patent 4,882,733, hereafter "Tanner"). Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda in view of Tanner, as applied to claim 1.

Claims 3-7, 11, 13-17, 21 and 25-42 are objected to as being dependent upon a rejected claim base, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Rejection Under 35 U.S.C. § 103(a) of Claims 1, 2, 8, 9, 10, 12, 18, 19, 20, 22, 23 and 24**

The Examiner rejects **claims 1, 2, 8, 9, 10, 12, 18, 19, 20, 22, 23 and 24** under 35 U.S.C. § 103(a) as being unpatentable over Sakoda et al. (US Patent 6,888,789) in view of Tanner (US Patent 4,882,733).

Applicants are genuinely puzzled by citation of Tanner. We have reviewed the whole reference and particularly the passages cited. Fundamentally, Tanner is a 1987 discussion of combining modulation and coding into a single system, without excessive complexity. The Examiner will appreciate that the circuit complexity required to implement the systems disclosed in this application might well have been considered excessive by Tanner twenty years ago.

We do not believe that Tanner FIGS. 3-4 or any part of Tanner discloses selecting bit load per sub-channel based on the self-similarity property of the constellation, the antecedent basis for "the constellation" having been selected by the Examiner as the constellation depicted in Sakoda FIG. 9. (OA p. 2 § 3(1) & p. 3 § 3(3))

First, the Tanner constellations are depicted in FIGS. 6-7, not 3-4. The Tanner FIGS. 6-7 constellations do not match the Sakoda FIG. 9 constellation and do not appear to be self-similar. Since Tanner does not depict self-similar constellations, it should not be surprising that the mention of nested subcodes (col. 10, lines 30-45) does not relate to Tanner FIGS. 6-7. Therefore, Tanner cannot supply the missing element, because the referenced invention does not appear to use and nowhere discusses applying a self-similar constellation.

Second, we do not find any discussion of sub-channels in Tanner. Throughout Tanner, "channel" is always used in its singular form; "channels" is not used in Tanner's disclosure. There is no mention of sub-channels, which would not be present in a single channel.

Third, we cannot find any discussion of bit loading sub-channels or even a single channel. The only context in which "load" is used by Tanner is loading a register, which has nothing to do with bit loading sub-channels. Discussions in Tanner, such as col. 2, lines 26-29, teach that the way to increase throughput is to increase bandwidth, not to increase the bit loading of a channel.

If the Examiner believes that Tanner supplies the element of selecting the bit load per sub-channel based on the self-similarity property of the constellation, Applicants urgently request a telephonic interview to reconcile their very different understandings. If the Examiner believes that some things that Tanner did not discuss in 1987 were nonetheless inherent in Tanner, it is important for the Examiner to say so.

Applicants challenge and reserve for further argument the assertion that one of ordinary skill in the art would be motivated to combine the references. The Examiner's statement does not satisfy the *In re Lee* standard, as articulated by the Federal Circuit and reiterated in the MPEP.

Applicants challenge and respectfully request evidence to support the Examiner's assertions of various mathematical applications being well-known (e.g., widely applied) in the realm of bit loading sub-channels. In particular, Applicants request an Examiner's declaration or a reference to support the assertion in the context of claim 10 that the claimed method was well known in the art of probability and statistics. It is not quite enough to say that the mean square deviation is a statistical measure. Applicants also request an Examiner's declaration or a reference to support

the assertion in the context of claim 11 that the application of self-similarity to non-square constellations was well-known for bit loading of sub-channels. Applicants mean to challenge each and every statement of what was well-known and why it would have been obvious to combine those statements with the art cited.

Applicants respectfully submit that claims 1, 2, 8, 9, 10, 12, 18, 19, 20, 22, 23 and 24 should be allowable over Sakoda in view of Tanner.

**Allowable Subject Matter**


Claims 3-7, 11, 13-17, 21 and 25-42 are objected to as being dependent upon a rejected claim base, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant appreciates the Examiner's indication of allowable subject matter.

**CONCLUSION**

Applicants respectfully submit that the pending claims are now in condition for allowance and thereby solicit acceptance of the claims, in light of these amendments.

The undersigned can ordinarily be reached at his office at (650) 712-0340 from 8:30 a.m. to 5:30 p.m. PST, Monday through Friday, and can be reached at his cell phone at (415) 902-6112 most other times.

Respectfully submitted,



---

Ernest J. Beffel, Jr.  
Registration No. 43,489

Dated: 08 May 2006

HAYNES BEFFEL & WOLFELD LLP  
P.O. Box 366  
Half Moon Bay, CA 94019  
Telephone: (650) 712-0340  
Facsimile: (650) 712-0263